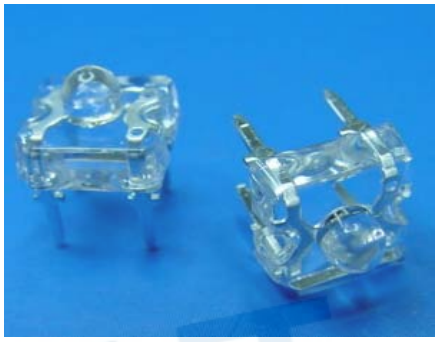
DATASHEET

3mm Advanced Super Flux LEDs
33-01-C44-RRFC-D1T1U1CH-AM



Lead (Pb) Free Product - RoHS Compliant

Feature

- Lead-Free
- RoHS compliant.
- Low profile.
- Uniform color
- High flux output
- Colorless clear resin.
- Brightness: 7150 to 14250 mlm at 70mA.
- Qualification according to AEC-Q101.
- Packaged in tubes for use with automatic insertion equipment.
- Compliance with EU REACH.
- Compliance Halogen Free .(Br <900 ppm ,Cl <900 ppm , Br+Cl < 1500 ppm).

Applications

- Automotive lighting
- Electronic Signs and Signals.
- Special Lighting application

Device Selection Guide

LED Part No.	Chip Material	Emitted Color	Resin Color
33-01-C44-RRFC-D1T1U1CH-AM	AlGaInP	Red	Water Clear

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Product Nomenclature

33	-	01	-	C5	4	-	RRF	C	-	D1	T1U1	C	H	-	AM
1		2		3	4		5	6		7	8	9	10		11

The product name is designated as below:

1.	Product type
2.	Lead-frame type
3	Angle
4.	Product pasted without Zener
5	Chip code
6.	Resin color
7.	Wavelength
8.	Power &Total Flux
9.	Range of Forward Voltage specification
10.	Operation current
11	Application

Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Rating	Unit
Reverse Voltage	V_R	5	V
Continuous Forward Current	I_F	70	mA
Power Dissipation	Pd	220	mW
LED Junction Temperature	T_j	115	℃
Operating Temperature	T_{opr}	-40 ~ +100	℃
Storage Temperature	T_{stg}	-40 ~ +110	℃
Electrostatic Discharge	ESD	2000	V
Soldering Temperature	T_{sol}	Wave Soldering : 260 ℃ for 5 sec Hand Soldering : 300 ℃ for 3 sec	

Electro-Optical Characteristics (Ta=25℃)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Total Flux	Φ_V	7150	-----	14250	mlm	I_F =70mA
Peak Wavelength	λ_p	-----	631	-----	nm	I_F =70mA
Dominant Wavelength	λ_d	620	-----	628	nm	I_F =70mA
Spectrum Radiation Bandwidth	$\Delta\lambda$	-----	18	-----	nm	I_F =70mA
Viewing Angle	$2\theta_{1/2}$	-----	110	-----	deg	I_F =70mA
Forward Voltage	V_F	1.9	-----	2.9	V	I_F =70mA
Reverse Current	I_R	-----	-----	10	μA	V_R =10V

Note:
1. Tolerance of Total Flux: ±11%
2. Tolerance of Dominant Wavelength: ±1nm
3. Tolerance of Forward Voltage: ±0.1V

Bin Range of Dominant Wavelength (Ta=25℃)

Bin	Min.	Max.	Unit	Condition
2	620	624	nm	I_F =70mA
3	624	628		

Note:

Tolerance of Dominant Wavelength: ±1nm

Bin Range of Forward Voltage (Ta=25℃)

Bin	Min.	Max.	Unit	Condition
2	1.9	2.1	V	I_F =70mA
3	2.1	2.3		
4	2.3	2.5		
5	2.5	2.7		
6	2.7	2.9		

Note:

Tolerance of Forward Voltage: ±0.1V

Bin Range of Total Flux (Ta=25℃)

Bin	Min.	Max.	Unit	Condition
T1	7150	9000	mlm	I_F =70mA
T2	9000	11250		
U1	11250	14250		

Note:

Tolerance of Total Flux: ±11%

Typical Electro-Optical Characteristics Curves

Typical Curve of Spectral Distribution

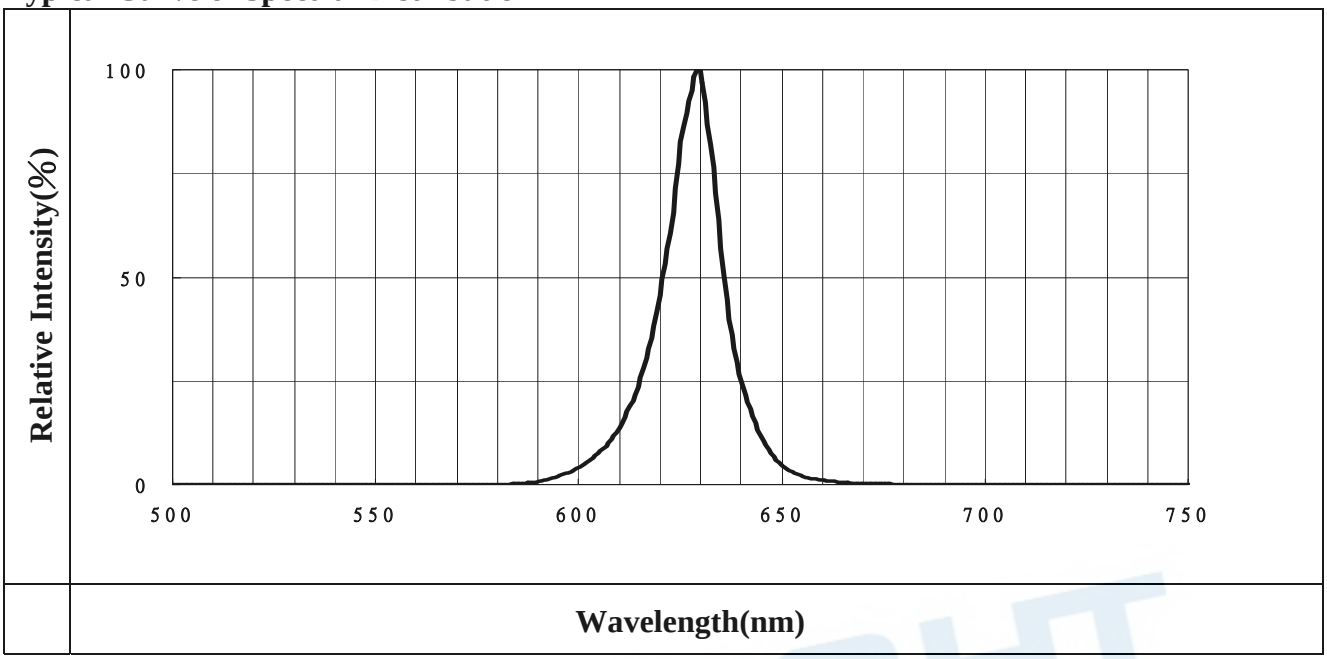
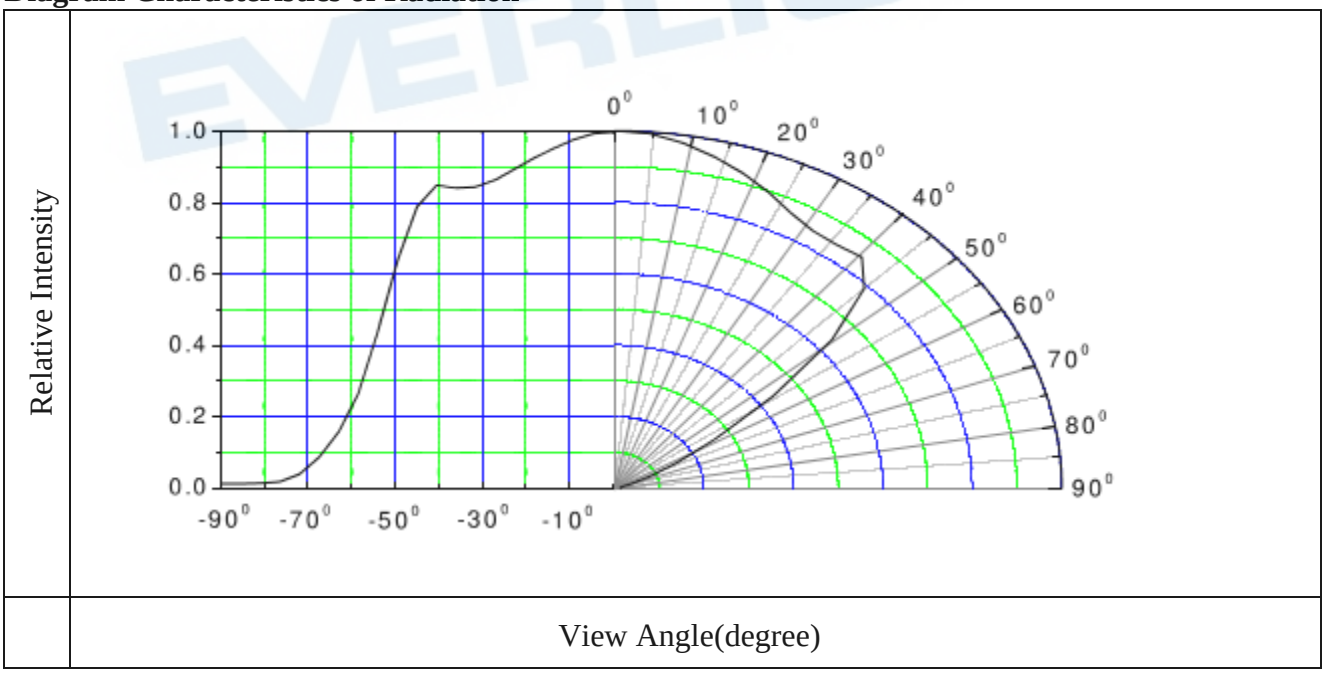
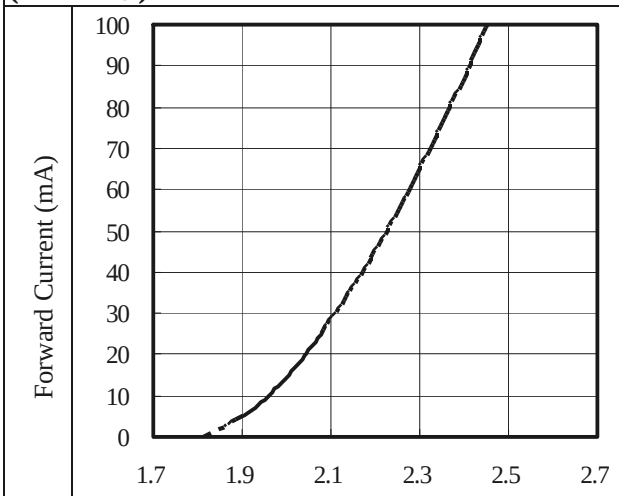


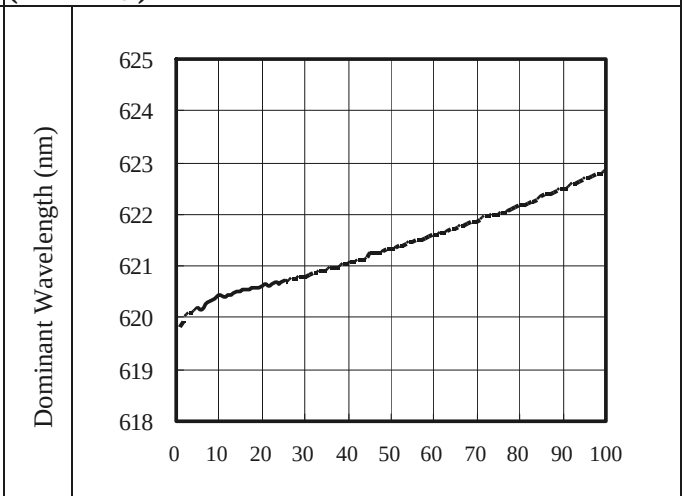
Diagram Characteristics of Radiation



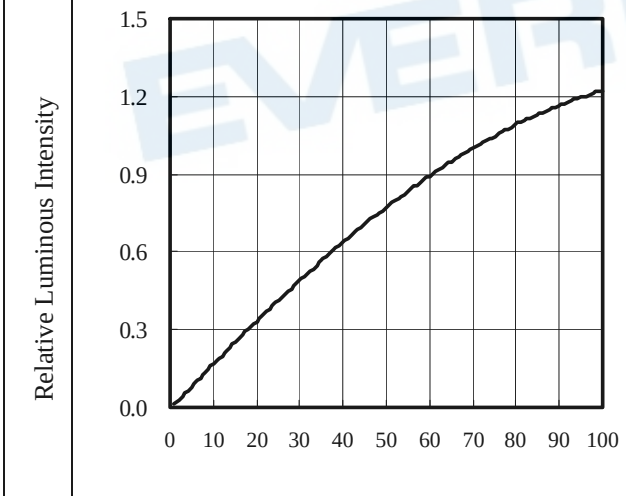
Forward Current vs. Forward Voltage (Ta=25℃)



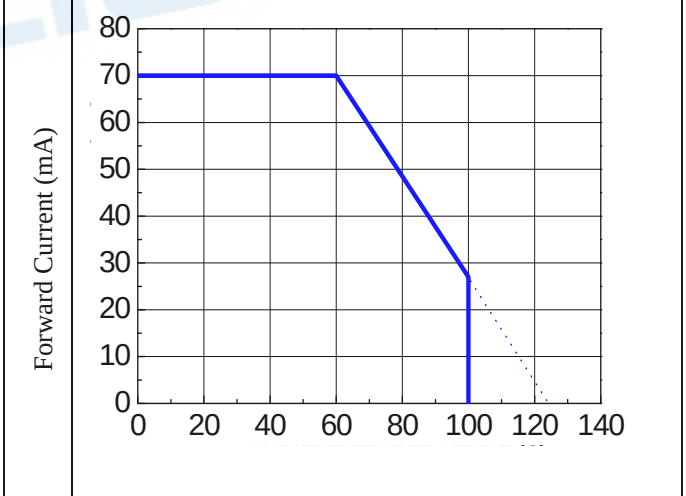
Dominant Wavelength vs. Forward Current (Ta=25℃)



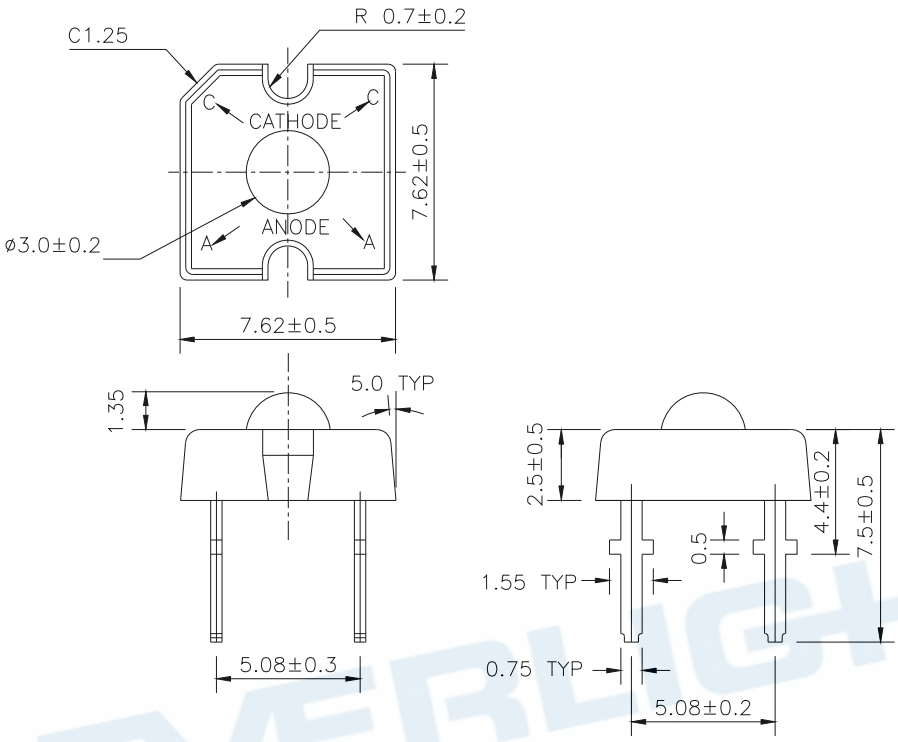
Relative Luminous Intensity vs. Forward Current (Ta=25℃)



Max. Permissible Forward Current vs. Ambient Temperature



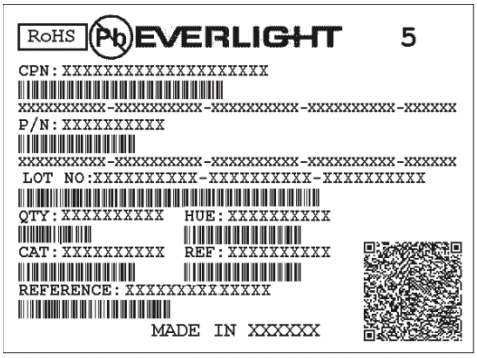
Package Dimension



Note: Tolerances unless mentioned ±0.25mm. Unit = mm

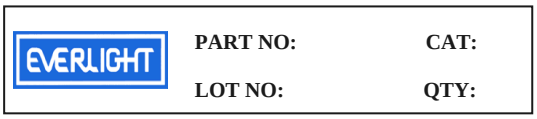
Inner and Outer Label Explanation

Outer Label Explanation



- CPN: Customer's Product Number
- P/N: Product Number
- QTY: Packing Quantity
- CAT: Rank of (VF)(Note*)(ΦV)
- NOTE: λ_d/CIE/Color temperature
- HUE/REF: Reference
- LOT No: Lot Number

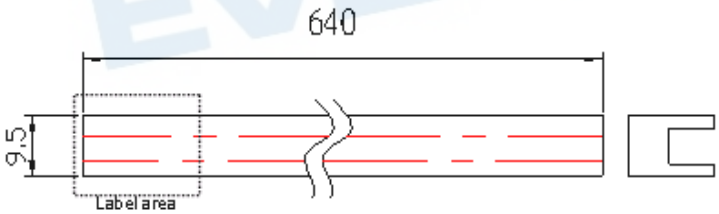
Inner Label Explanation

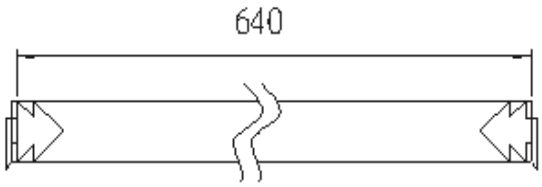


- P/N: Product Number
- QTY: Packing Quantity
- CAT: Rank of (VF)(Note*)(ΦV)
- NOTE: λ_d/CIE/Color temperature
- LOT No: Lot Number

Antistatic Packing Materials Tube

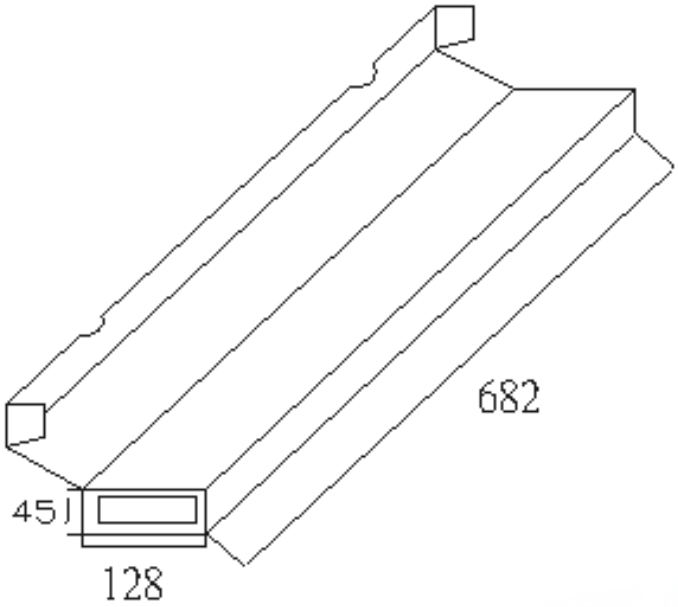
Materials Tube





Note:
1. Tolerances unless mentioned ±2.0mm.
2. Unit = mm

Standard Boxes



Note:
1. Tolerances unless mentioned ±3.0mm.
2. Unit = mm

Precautions for use

1. Lead Forming

- During lead formation, the leads should be bent at a point at least 3mm from the base of the epoxy bulb.
- Lead forming should be done before soldering.
- Avoid stressing the LED package during leads forming. The stress to the base may damage the LED's characteristics or it may break the LEDs.
- Cut the LED leadframes at room temperature. Cutting the leadframes at high temperatures may cause failure of the LEDs.
- When mounting the LEDs onto a PCB, the PCB holes must be aligned exactly with the lead position of the LED. If the LEDs are mounted with stress at the leads, it causes deterioration of the epoxy resin and this will degrade the LEDs.

2. Storage

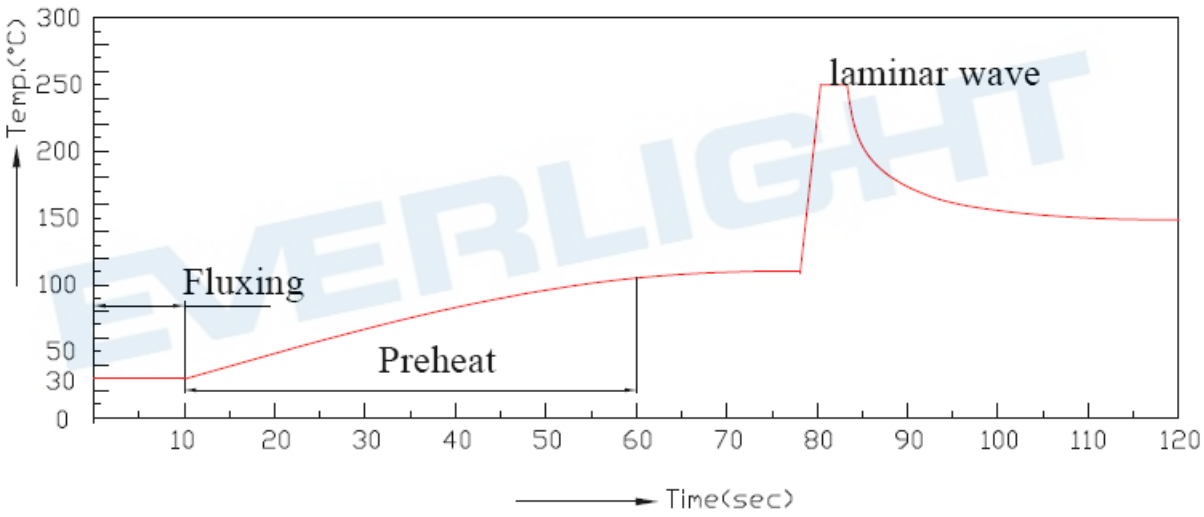
- The LEDs should be stored at 30°C or less and 60%RH or less after being shipped from Everlight and the storage life limits are 3 months. If the LEDs are stored for 3 months or more, they can be stored for a year in a sealed container with a nitrogen atmosphere and moisture absorbent material.
- Please avoid rapid transitions in ambient temperature, especially, in high humidity environments where condensation can occur.

3. Soldering

- Careful attention should be paid during soldering. Solder the LED no lower than 1.6mm from the base of stopper is recommended.
- Avoiding applying any stress to the lead frame while the LEDs are at high temperature particularly when soldering.
- Recommended soldering conditions:

Hand Soldering		DIP Soldering	
Temp. at tip of iron	300℃ Max. (30W Max.)	Preheat temp.	100℃ Max. (60 sec Max.)
Soldering time	3 sec Max.	Bath temp.	260 Max.
Distance	No lower than 1.6mm from the base of stopper	Bath time.	5 sec Max.
		Distance	No lower than 1.6mm from the base of stopper

- Recommended soldering profile



- To avoid any stress to the lead frame while the LEDs are at high temperature particularly when soldering.
- Dip or hand soldering should not be done more than one time.
- The len of LEDs should be protected from mechanical shock or vibration until return to room temperature after soldering.
- Cooling rapidly is not recommended after cold down from peak temperature.
- Dipping parameters must be set and maintain according to recommended range.

4. Cleaning

- Cleaning with isopropyl alcohol should not more than one minute and dry it in room temperature.
- Ultrasonic cleaning is prohibited which may damage the LEDs.

5. Thermal Management

Sufficient thermal management must be implemented. Otherwise, the junction temperature of the die might be over the limit at high current driving condition and LEDs' lifetime might be decreases dramatically.

6. ESD (Electrostatic Discharge)

- The products are sensitive to static electricity or surge voltage. ESD can damage a die and its reliability.

  When handling the products, the following measures against electrostatic discharge are strongly recommended:

  Eliminating the charge

  Grounded wrist strap, ESD footwear, clothes, and floors

  Grounded workstation equipment and tools

  ESD table/shelf mat made of conductive materials
- Proper grounding is required for all devices, equipment, and machinery used in product assembly. Surge protection should be considered when designing of commercial products.
- If tools or equipment contain insulating materials such as glass or plastic,

  the following measures against electrostatic discharge are strongly recommended:

  Dissipating static charge with conductive materials

  Preventing charge generation with moisture

  Neutralizing the charge with ionizers

7. Directions for use

- The LEDs should be operated with forward bias. The driving circuit must be designed so that the LEDs are not subjected to forward or reverse voltage while it is off. If reverse voltage is continuously applied to the LEDs, it may cause migration resulting in LED damage

8. Other

- EVERLIGHT assumes no responsibility for any damage resulting from use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification sheets.
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Application Restrictions

High reliability applications such as military/aerospace, automotive safety/security systems,and medical equipment may require different product. If you have any concerns, please contact Everlight before using this product in your application. This specification guarantees the quality and performance of the product as an individual component. Do not use this product beyond the specification described in this document.

DISCLAIMER

1. EVERLIGHT reserves the right(s) on the adjustment of product material mix for the specification.
2. The product meets EVERLIGHT published specification for a period of twelve (12) months from date of shipment.
3. The graphs shown in this datasheet are representing typical data only and do not show guaranteed values.
4. When using this product, please observe the absolute maximum ratings and the instructions for using outlined in these specification sheets. EVERLIGHT assumes no responsibility for any damage resulting from the use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification sheets.
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Revision History

Rev.	Modified date	File modified contents
1	2009/9/1	New Spec.
2	2013/5/24	Chang to the form of datasheet
3	2014/2/25	Chang the size of the packaging carton
4	2014/7/11	Change the packing specification
5	2020/11/27	Change the Viewing Angle
6	2023/9/8	SIX additional statements